Journée d'Analyse Appliquée

Dijon, jeudi 10 juin 2010

Salle René Baire

9h15-10h
Lionel Thibault (Université de Montpellier II) : *Subsmooth sets and functions*
Résumé : We will revisit the concept of subsmooth functions and subsmooth sets. Then we will show how necessary and sufficient conditions ensuring the calmness property can be established through subsmoothness assumptions.

10h-10h30
Pause-café

10h30-11h15
Gabriele Greco (Université de Trento) : *La caractérisation géométrique des sous-variétés C^1 d' espaces euclidiens via différents types de cônes tangents*
Résumé : Le fait que l'espace tangent varie d'une manière continue ne suffit pas à caractériser les sous-variétés C^1 d'un espace euclidien. En (1968), Gluck donne la première caractérisation "géométrique" des sous-variétés C^1 : la continuité de l'application sécante. Après Gluck, par des méthodes très différentes Tierno (1997) et Jeromin (2001) donnent d'autres caractérisations "géométriques" employant respectivement des cônes tangents et l'analyse non-standard. Dans ce séminaire on trace l'histoire des notions d'espace et de cône "tangents à un ensemble", de "limite de suites d'ensembles", d'"angle entre espaces vectoriels", pour arriver à des nouvelles caractérisations.

11h15-12h
Dariusz Zagrodny (Cardinal Stefan Wyszynski University, Warsaw) : *Vector Variational Principles*
Résumé : For mappings f with values in a vector space Y , the existing vector variational principles are directional in the sense that for a given direction e from the space Y a real-valued perturbation function g is constructed such that the mapping $f + ge$ has an effcient point. When $Y = \mathbb{R}$, the structure of the space forces $e = 1$. In general case, however, it is natural to admit different directions of perturbations in order to increase the applicability of vector variational principles. During the talk two vector principles are planned to be presented: a smooth vector variational principle for directions of perturbations belonging to a certain subset D of Y (a vector counterpart of Borwein-Preiss principle) and an Ekelands type vector variational principle.

12h - 14h
Déjeuner

14h - 15h
Szymon Dolecki : *A unified theory of function spaces and hyperspaces*
Every convergence (in particular, every topology) τ on the hyperspace $C\,(X, \$)$ of closed (or open) sets *preimage-wise* determines a convergence $\tau^{\Uparrow}$ on $C\,(X, Z)$, where X, Z are topological spaces and \$ is the *Sierpiński topology*, so that $f \in \lim_{\tau^{\Uparrow}} \mathcal{F}$ if and only if $f^{-1}(U) \in \lim_{\tau} \mathcal{F}^{-1}(U)$ for every open subset U of Z. Classical instances are the *pointwise, compact-open and Isbell* topologies, which are preimage-wise with respect to the topologies, whose open sets are the collections of, respectively, all (openly isotone) *finitely generated*, *compactly generated* and *compact* families of open subsets of X (compact families are precisely the open sets of the *Scott topology*, dually *upper Kuratowski topology*); the *natural* (that is, *continuous*) convergence is preimage-wise with respect to the *natural hyperspace* convergence.
It is shown that several fundamental local properties hold for a hyperspace convergence τ (at the whole space) if and only if they hold for $\tau^{\Uparrow}$ on $C\,(X, \mathbb{R})$ at the origin, provided that the underlying topology of X have some $\mathbb{R}$-separation properties. This concerns character, tightness, fan tightness, strong fan tightness, and various Fréchet properties (from the simple through the strong to that for finite sets) and corresponds to various covering properties (like Lindelöf, Rothberger, Hurewicz) of the underlying space X.

15h-16h Abderrahim Jourani : *Favorable classes for radiality and semismoothness*
Résumé : We provide favorable classes for radiality and semismoothness. The first class concerns Dini-radiality as well as Dini-convexity of solution set to inequality systems in Banach spaces. The second one is related to a new concept of Clarke-radiality and semismoothness of order m in finite dimenion. The last one includes, in particular, subanalytic sets and functions.

Organisateurs : S. Dolecki et A. Jourani